

Unit One

TYPES OF LEVERS

Lesson 1

➢**The most common simple machines are levers.**

The lever:

Is a rigid bar that rotates around a fixed point called the fulcrum and is affected by effort force and resistance force.

Note : Levers were first described in the year **260** B.C by the Greek scientist **(Archimedes)**

ARCHIMEDES

LAW OF THE LEVER

IMPORTANCE OF THE LEVERS:

1- **INCREASE FORCE** by save the effort exerted by using small force to move heavy load like crowbar and nutcracker

G.R The crowbar is considered as force lever (save effort).

Because it used to make a great effort by using a small force

2- **INCREASE DISTANCE** by exerting a force for a small distance to move object large distance like the broom

3- **INCREASE SPEED** of object that affect on as in the hockey bat

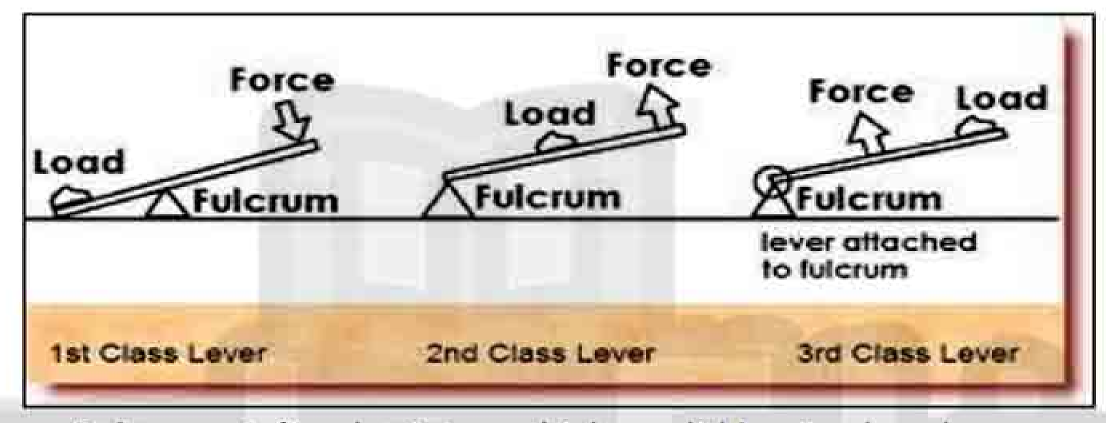


4- **MOVING FORCE FROM PLACE TO ANOTHER** like in manual broom.

5- accuracy in performance like using the tweezers to **PICK UP VERY SMALL OBJECTS**

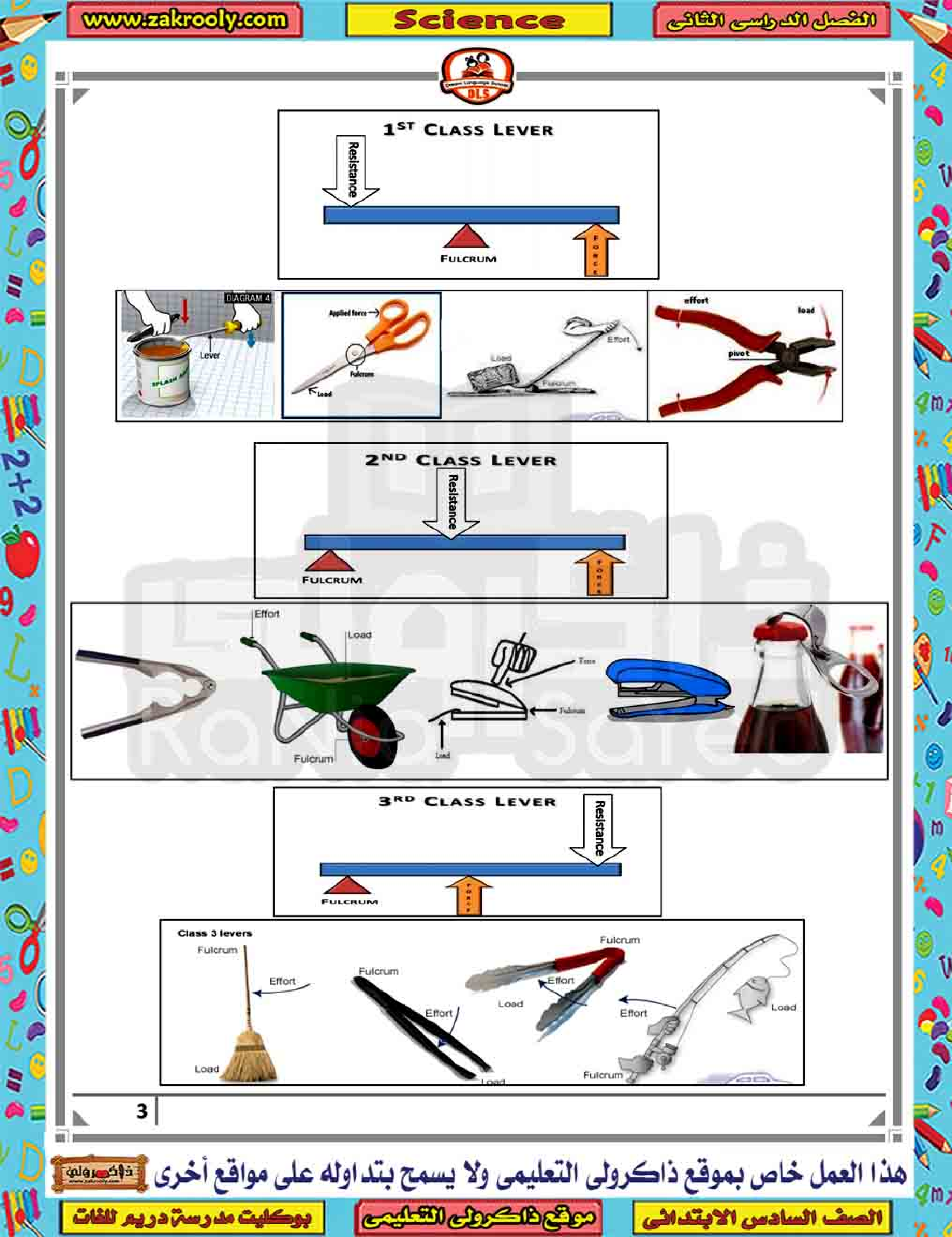
6- **AVOID DANGERS** like heat, cold and poisonous materials as in coal holder

TYPES OF LEVERS:

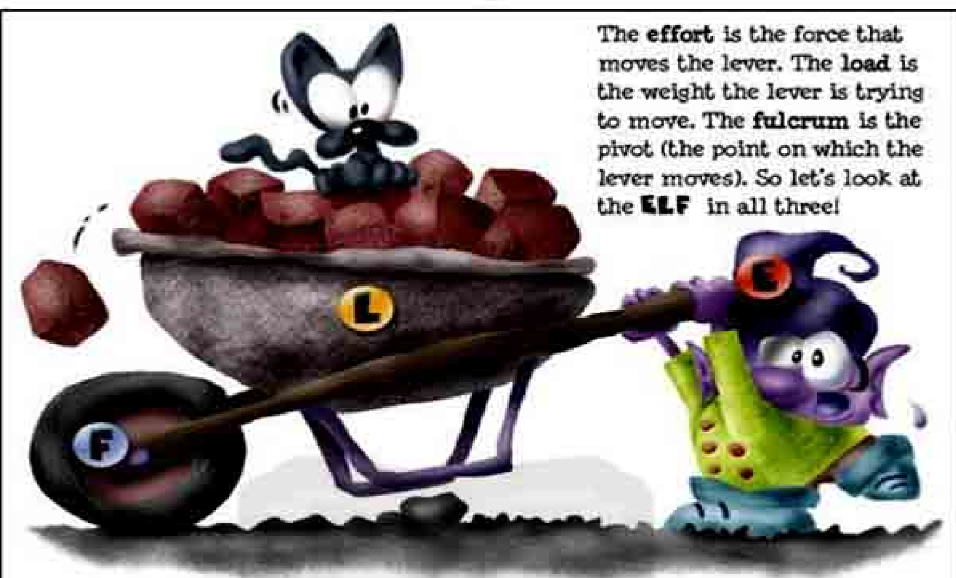


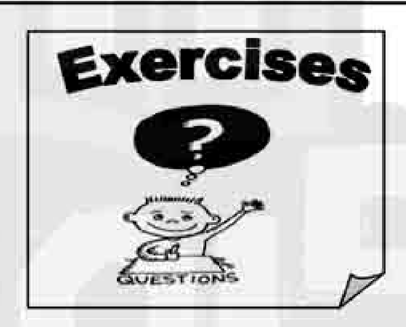
Fulcrum: A fixed point on which a solid bar is placed.

	First class	Second class	Third class
Middle point	Fulcrum	Force of resistance	Force of effort
Examples	See-saw Crowbar Scissors Suction pump Paddle Nail clipper Pincer Pliers Balance	Nutcracker Soda-water opener Wheel barrow Stapler	Fish tool Manual broom Sweat – ice – coal holder Tweezers Hockey bat Claw hammer


www.zakrooly.com
Science
الفصل الدراسى الثانى
1ST CLASS LEVER
Resistance
FULCRUM
FORCE
DIAGRAM 4
Lever
Applied force
Fulcrum
Load
Load
Effort
Fulcrum
effort
load
pivot
2ND CLASS LEVER
Resistance
FULCRUM
FORCE
Effort
Load
Fulcrum
Force
Fulcrum
Load
3RD CLASS LEVER
Resistance
FULCRUM
FORCE
Class 3 levers
Fulcrum
Effort
Load
Fulcrum
Effort
Load
Fulcrum
Effort
Load
Effort
Load
Fulcrum
3
هذا العمل خاص بموقع ذاكرولى التعليمى ولا يسمح بتداوله على مواقع أخرى
بوكليت مدرسة دريم للغات
موقع ذاكرولى التعليمى
الصف السادس الابتدائى







Write the scientific term:

1- The fixed point of a rigid bar rotate on.

2- A rigid bar rotates on a fixed point, and is affected by a force and resistance.

3- Levers that have the fixed point between the force and the resistance.

4- Levers that have the fixed between the resistance and the fixed point.

5- Levers that have the resistance between the force and the fixed point.

Complete the following sentences:

1. Levers which make tasks perform more easily by means of ……………, …………… or …………….
2. The crowbar is considered a …………… class lever, but the manual broom is a …………… class lever.



3. .... and .... are examples of the first class levers.
4. .... and .... are examples of the second class levers.
5. .... and .... are examples of the third class levers.

GR.

1- Levers are very important in our daily life.

....

....

2- The wheel barrow is a liver .

....

....

3- Some lever save effort.

....

....

4- Nail clipper is first class lever .

....

....

5- Hockey bat is third class lever.

....

....

6- Bottle opener is second class lever.

....

....

7- Doctors and watch maker use tweezers as a lever.

....

....

8- The manual broom is an increasing distance lever.

....

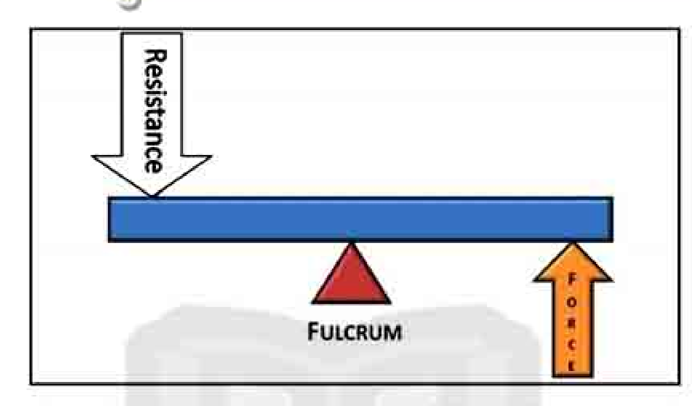
....



Unit One

LAW OF LEVERS

Lesson 2



Effort force arm: the distance between effort force and fulcrum

Resistance arm: the distance between resistance and fulcrum

THE LAW OF LEVERS

The effort force X its arm = the resistance X its arm

	force(N)	Arm of force(cm)	Resistance (N)	Arm of resistance(cm)	Force x its arm	Resistance x its arm
1	50	40	50	40	20000	20000
2	60	30	120	15	1800	1800
3	70	20	35	40	1400	1400
4	20	10	25	8	200	200

Note :-

The effort force or resistance is inversely proportional to its arm



Conclusions:

1- when the arm of force = the arm of resistance

So the force = the resistance **So** this lever doesn't conserve effort

2- When the arm of force > the arm of resistance

So the force < the resistance **So** this lever conserve effort

3- when the arm of force < the arm of resistance

So the force > the resistance **So** this lever doesn't conserve effort

This table represents one of the means of verify the law of levers

The force (n. coins)	Arm of force (cm)	The resistance (n. coins)	Arm of resistance(cm)
2	5	1	A
3	10	B	10
4	C	2	10
D	15	6	5

Solution::

the force X its arm = the resistance X its arm

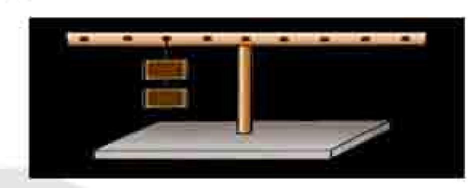
a) 2 x 5 = 1 X arm of the resistance Arm of the resistance = 10 cm	c) 4 X arm of the force = 2 X 10 Arm of the resistance = 5 cm
b) 3 X 10 = the resistance X 10 The resistance = 3 coins	d) The force X 15 = 6 X 5 The force = 2 coins

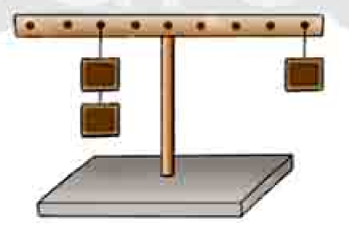


Example 2:

"Determine by drawing the position where only one weight is placed for the lever to regain its balance in the following figures, keeping in mind that the distances between every two openings is 1 cm.





The resistance = 1 weight The force = 1 weight Arm of the resistance = 2 cm The force X its arm = The resistance X its arm 1 X arm of the force = 1 X 2 Arm of the force = 2 cm 	The resistance = 2 weights The force = 1 weight Arm of the resistance = 2 cm The force X its arm = the resistance X its arm 1 X arm of the force = 2 X 2 Arm of the force = 4 cm 



What are the levers which conserve the effort?

1- in the first class levers:

* arm of force is longer than arm of resistance the force is smaller than the resistance so the effort conserved

* arm of force = arm of resistance the force is equal to the resistance so the effort not conserved

* arm of force is shorter than arm of resistance the force is larger than the resistance so the effort not conserved

2- in second class levers:

The arm of force is always longer than the arm of resistance so it conserve effort and has a mechanical benefit

3- in third class levers:

The arm of resistance is always longer than the arm of force so it does not conserve effort and has no mechanical benefit

Note :-

Despite the fact that some of the machines do not conserve the effort, but these machines are beneficial in other things such as increasing the distance, speed , etc....





Complete the following sentences:

a- The law of levers states that ....

b-The type of levers that always conserves effort is .... while the type of the levers that always does not conserves effort is ....

c- There is a conservation of effort for the first class levers if the .... is larger than ....

d- The force and the resistance are equal in levers if ....

Explain the following = Give reason :

1 The second class levers conserve effort.

B. effort arm is always longer than resistance arm So effort force < resistance

2 The third class levers do not conserve effort.

B. effort arm is always shorter than resistance arm So effort force > resistance

3 The force and the resistance can be equal only in the first class levers.

B. in first class lever only effort arm may be = resistance arm

4 Some of the levers are important to man although they don't conserve effort

B. increasing distance and speed – avoid dangers – pick up very small objects



5 Sometimes the 1st class levers save effort

B. sometimes force arm is longer than resistance arm

So effort force < resistance

6 The force doesn't equal the resistance in the 2nd class lever

B. effort arm is always longer than the resistance arm

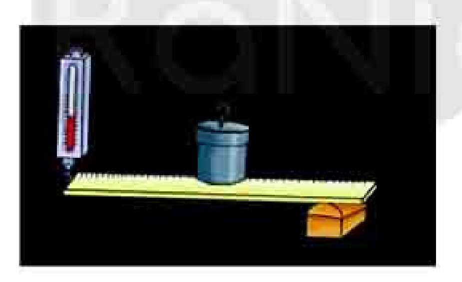
7 In the 2nd class levers the force is always less than resistance

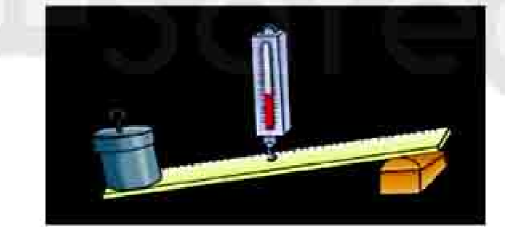
B. effort arm is always longer than the resistance arm .

8 When the resistance arm is longer than the effort arm, the effort force is larger than the resistance.

B. force and resistance are inversely proportional to its arm

3 Determine which of the following levers conserve the effort. Give reason for your answer:





4 The exerted force of the first class lever equals 500 Newton and the length of its arm is 20 cm and is affected by a resistance with a value of 200 Newton. Find the resistance arm.



Unit two

Electric energy
1- The electric lamps

Lesson 1

Electric lamp: it is a tool that converts electric energy to light energy by passing an electric current through it

Electric current: is the flow of electric charges (electrons) through a material conducting electricity

Types of lamps:

First: light bulbs:

They are the most popular source in houses , car lights and torch

The structure of light bulbs:

1. **the filament**: wire made of **tungsten function** glow and emit light by pass electric current.

Function of copper and lead wires: pass electric current from base to tungsten.

G.R: using tungsten because its melting point is high

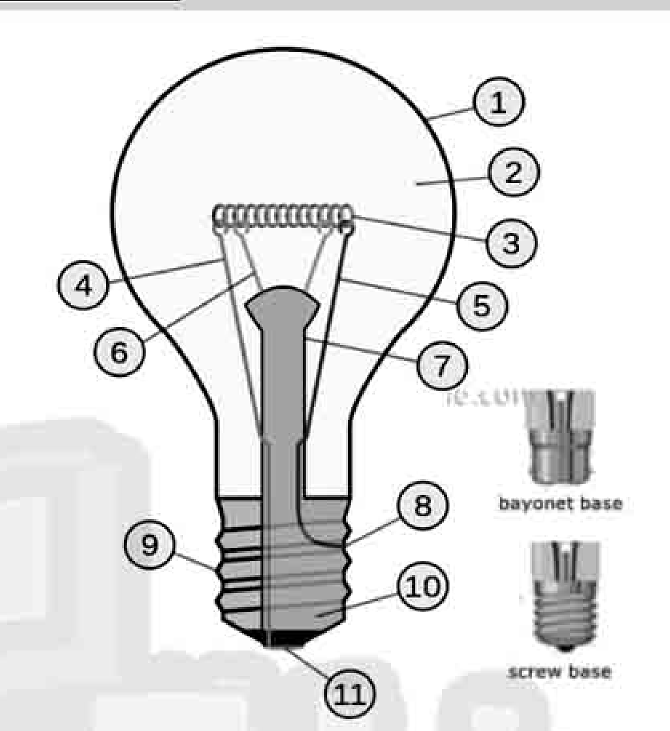
2. **a glass bulb function** to avoid air from reaching the filament not to get burned **G.R most of lamps contain inert gases as argon instead of air**
To avoid burning of the filament and increase its life

3. **The base function of the light bulb**:
carries the lamp upright and connect it with electric current
a) **spiral base** that has a piece of lead to connect lamp with electric circuit.
b) **Two sides nail base** has two pieces of lead to connect lamp with electric circuit.



structure of the bulb

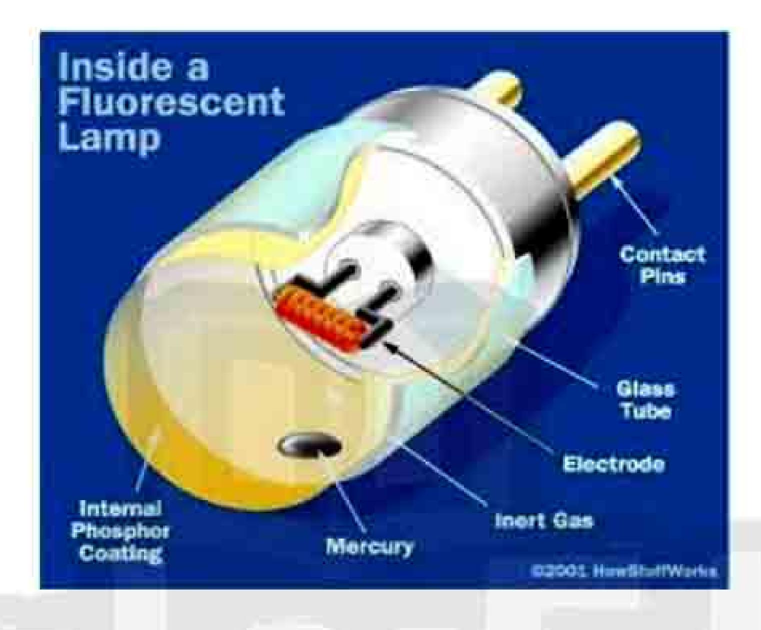
1. Glass bulb.
2. Inert gas
3. Tungsten filament
4. Contact wire (goes to foot)
5. Contact wire (goes to base)
6. Support wires
7. Glass mount/support
8. Base contact wire
9. Screw threads





Second: the fluorescent lamps :(neon lamps)

used in houses, offices, decorating commercial stores and commercial advertisements



<u>the structure of the fluorescent lamps:</u>

1- **<u>glass tube</u>**: it is vacuumed and contains **inert argon gas** and a little amount of **mercury** and the inner tube surface is covered with a **phosphoric** material
2- **<u>Two filaments of tungsten:</u>** inside the tips of the lamp

3- **<u>points of connection function</u>**: two points at each tip to connect electricity

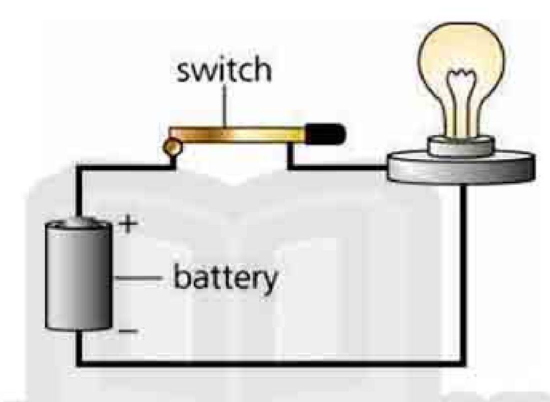


The electric circuit:

closed path by which electric current pass through.

The electric circuit:

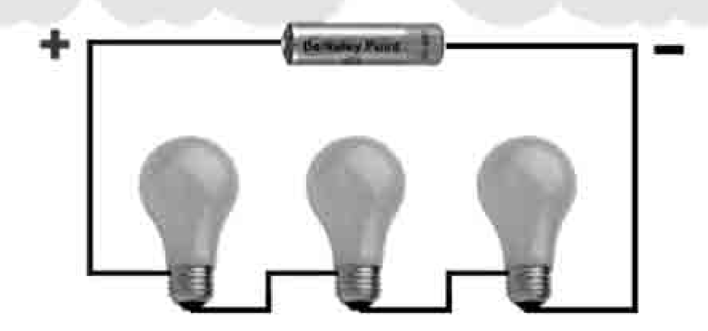
consists of battery – lamp – electric wires.



Methods to connect electric lamps:

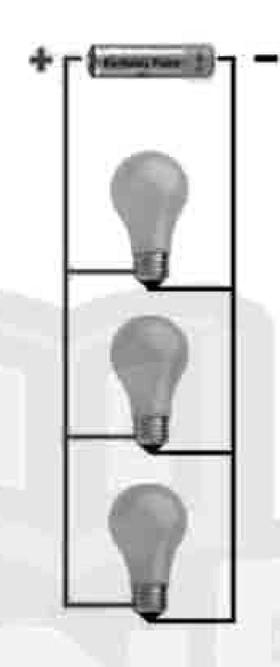
First: connecting the electric lamps in the electric circuits:

1- **Connecting in series:**
The bulbs are connected one after another in one route all the bulbs turn off by damage of one lamp and the light intensity decrease.





2- Connecting in parallel: The way where the bulbs are connected by branching routes and the lighting of the lamps is not affected with the increase in their number.



Second: connecting electric lamps in a house:

All lamps in the house are connected in parallel. Turning off or damage of any of the lamps in a room do not affect the lamps present in the rest of the rooms.





1 Complete the following sentences:

a- Some of the types of electric lamps are .... and ....

b- The Filament of the light bulb is made of .... and that is because it has a high ....

c- The light bulb consists of ...., ... and ....

d- The fluorescent lamp contains the inert .... gas.

2 Write the scientific term for each of the following:

a. A way in which the light bulbs is connected one after the other, and the light intensity of the bulbs decreases with the increase in their number.

b. Means of converting the electric energy to lighting.

c. The way where the bulbs are connected by branching routes and the lighting of the lamps is not affected with the increase in their number.

3 What happens if:

a- You make the filament of the light bulb from iron.

The filament melts at high temperature.

b- There is air inside the light bulb.

The filament burn when it heats up.

c The light bulbs in the house are connected in series.

Lamp turn off when one lamp is damage.



4 Write a scientific explanation for each of the following.(Give Reason):

a. The filament of the light bulb made of tungsten.

B. it has high melting point.

b. The glass bulb in light bulb filled with inert gas (Argon gas).

To avoid burning of the filament and increase its life

c. There are two pieces of lead in the base of light bulb.

To connect lamp with electric circuit.

d. There are two points of connection at each tip of fluorescent lamp.

To connect electricity.

e. The light bulbs are connected in parallel in the house.

To avoid turn off all lamps when one lamp is damage.



Unit two

dangers of electricity and how to deal with it

Lesson 2

Materials are divided into two :

1- Electric conductors	2- Electric insulator
Materials that allow electricity to flow through it	Materials that do not allow electricity to flow through it.
Examples	Examples
metal materials (aluminium - iron - copper) – water.	(plastic, rubber, wood, and glass).

Types of injuries resulting from improper use of electricity:

Direct injuries

Include fires resulting from electricity, electric shock and burns.

Indirect injuries

injuries caused by falling from top of a ladder due to electric shock.

Dangers of electricity are:

a. Electric fires b. Electric shock c. Electric burns





A) Electric fires:

Fires result from increase temperature of electric devices.(machines)



Reasons (causes) of electric fires:

1- Burning of materials like furniture, clothes and rugs
2- Operating more than one machine from one socket
3- Leaving machines connecting that generate heat after using

B) Electric shock:

is the result of electric current passing through the human body.

B. the body closes the circuit so the current flow from body part to another part.



The reasons of electric shock: when the body part touch a wire has an electric current and the second part touch (ground – conducting material – wire)

C) Burns resulting from electric current:

Electric burns: are burns resulting from electricity cause a damage of body tissues

Reasons of electric burns



1- Touching electric current source (electric shock)
2- Touching fire resulting from electricity
3- Touching electric machine that generate heat



Precautions in dealing with electricity are:

1-Do not place several connections in the same socket.

2-Do no insert a metal object in the socket

3-Place a piece of plastic in the socket

4-Do not touch the electric connected machines with a wet hand.

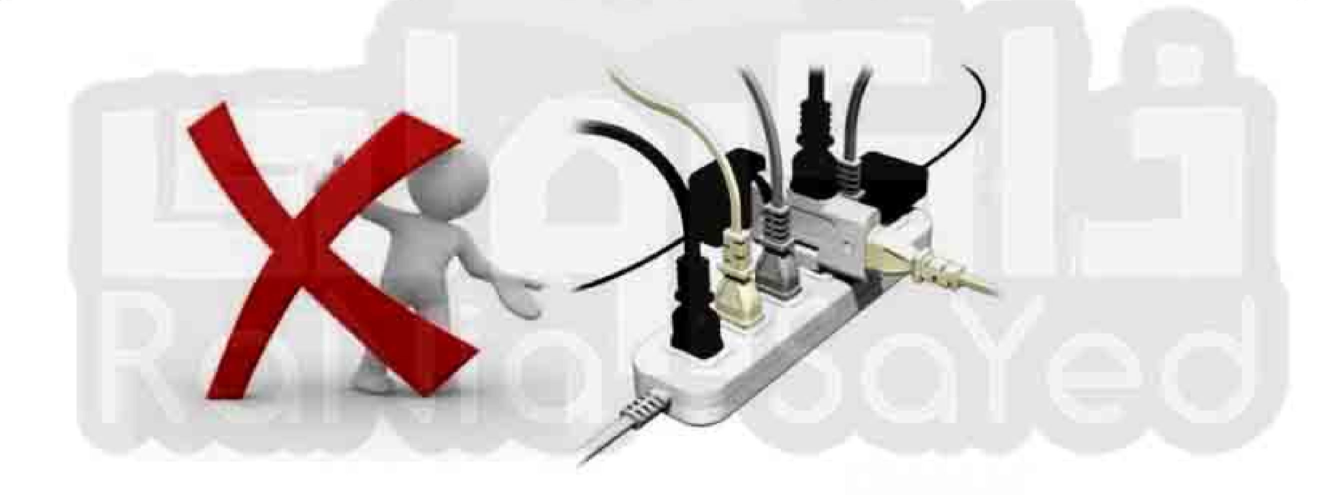
5-Do not play with the electric connections.

6-Do not clean any electric machine while connected with the electric current.

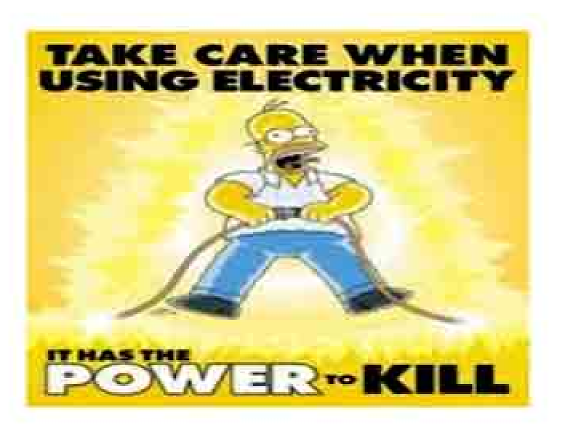
7-Do not place the flammable materials near the electric machines

8-Do not leave the wires naked and not insulated.

9-Do not place the electric wires extending on the ground











1 Complete the following sentences:

a. .... and .... are examples of electric conductors.

b. .... and .... are examples of electric insulators.

c. ...., ... and .... are some dangers of electricity.

d. ...., ... and .... are causes of electric fires.

e. Electric shock occurs as a result of passing .... through human body.

f. You can't put out fires by water because water is ....

g. The .... leads to destroying the tissues of the body.

h. ....and .... are causes of burns resulting from electricity.

i. .... and .... are precautions to deal with electricity.

2 Write the scientific term for each of the following:

a. Materials that allow electric current to pass through them.

b. Materials not allow electric current to pass through them.

c. One of dangers of electricity occur by pass electric current in human body.

d. Fires result from increase temperature of electric machines.

e. One of dangers of electricity causing damage of tissues of the body.



3- What happens if:

a. A man touches uncovered wire carrying electric current.

You insert a metal bar in electric socket.

You touch a plugged electric machine with wet hand.

Touching a naked wire, while touching the ground.

It causes electric shock.

b. You place electric heater too close to furniture or carpets.

It makes fire and burn when temperature increases.

c. The electric fires are put out by water. Give reason for your answer

Fire increases and harm rescuers

B. water is good conductor of electricity.

d. The spark resulting from the electric fire touches any part of your body

It causes electric burn.

4- Give Reason:

a. Not placing flammable materials close to electric machines that generate heat after use.

To avoid electric fires.

b. Don't place any metallic object inside the socket.

Or Pushing the injured by anything that is non-conducting of electricity such as a piece of wood.

To avoid electric shock.

c. Water is not used to put out electric fires.

B. water is good conductor of electricity.



Revision

(Units 1 & 2)

1- Write the Scientific term:

1- The force that is resulted from the body we want to move.
2- A simple machine that increases force and is used to avoid dangers.
3- The most popular type of levers.
4- The type of force in the second class lever, that is between the force and fulcrum.
5- The type of levers that it's mid-point is the effort force.
6- Force x its arm = resistance x its arm
7- A force that increases when the resistance arm is shorter than the force arm.
8- A type of lever that sometimes its arm of force equals its arm of resistance.
9- A type of lever where the effort force maybe larger or smaller than the resistance force.
10- A type of lever where the effort force is always greater than the resistance force.
11- A part of the light bulb that is made of thin glass and contains an inert gas.
12- It carries the lamp upright and connects the lamp to the electric source.
13- A closed path in which electricity can pass through. A danger that occurs when you place flammable materials near electric devices that generate heat.
14- The material that can be used to extinguish electric fires.
15- The danger that occurs when the body is in a closed circuit.
16- A danger that causes damage to the body tissue.



2- What is meant by ...?

1- Effort force:

....

2- Arm of resistance:

....

3- Arm of force:

....

4- Law of levers:

....

5- Lever that saves effort:

....

6- Lever that has no mechanical benefit:

....

7- Electric lamp:

....

8- Electric current:

....

9- Electric circuit:

....

3- Give reasons for:

1- The pincer, scissors and water pump are considered as levers.

....

2-Doctors and watch makers use tweezers as a lever.

....

3-When the arm of resistance is greater than the arm of effort the lever doesn't conserve effort.

....

4-When the arm of force is greater than the arm of resistance the lever has mechanical benefit.



5-The force doesn't equal the resistance in 2nd class levers.

6-Nutcracker and wheel barrow have mechanical benefit.

7- Copper and lead wires are connected with the filament from one end and the lamp base from the other end.

8- The fluorescent lamp is important in our lives.

9- In decorative lights, if one light bulb burns out the others stay lit.

10- Electric energy is important in our lives.

11- Plugging many devices in one socket causes an electric fire.

12- We must disconnect the electric current from devices that generate heat like the electric iron.

13- If we insert an iron nail in an electric circuit, the electric current will pass through and the circuit will be closed.

14- If we insert a piece of wood in an electric circuit, the electric current will not pass through.

15- We cover unused sockets with a piece of plastic.



4- What happens when ... ?

1- The arm of force equals the arm of resistance.

....

2- The arm of effort is longer than the arm of resistance.

....

3- The resistance arm is longer than the force arm.

....

4- The resistance is larger than the effort.

....

5- The effort arm and resistance arm equal 7 cm.

....

6- There is no glass bulb around the parts of the lamp.

....

7- There is no battery in the electric circuit.

....

8- Many lights are connected in series.

....

9- A light bulb burns out in an electric circuit connected in series.

....

10- The electric current passes through the tungsten filament.

....

11- Plugging several machines in one socket.

....

12- A piece of glass is placed in an electric circuit.

....



13- You touch an electric device with wet hands.

....

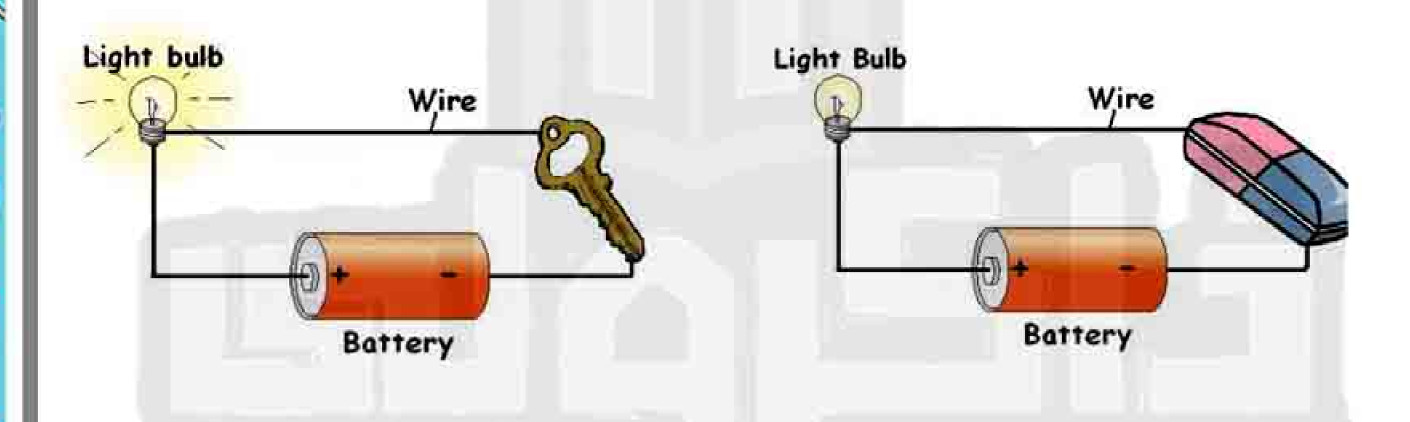
14- You try to fix an electric machine while it is switched on.

....

15- A part of your body touches an iron connected with electricity.

....

<u>Write the observation and conclusion for the following experiments:</u>



Observation:

....

Conclusion:

....



Unit three

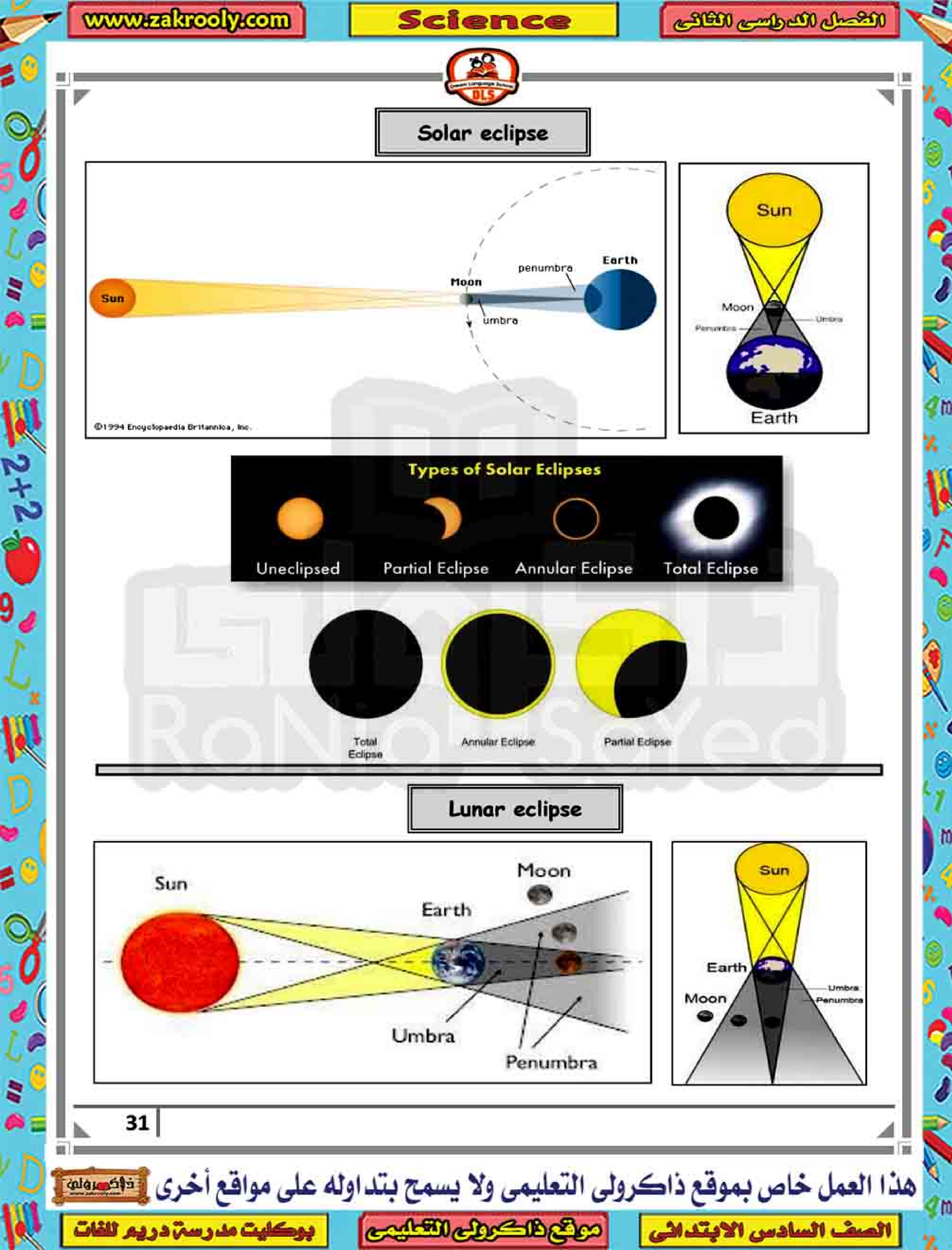
Space and universe

Lesson 1&2

points	Solar eclipse	Lunar eclipse
Definition	It is astronomical phenomenon the earth, the moon and the sun are nearly on one straight line with the **moon in the middle**. The moon casts its shadow on the earth hiding the sunlight from a part of the earth.	It astronomical phenomenon occurs when sun, Earth and the moon are on one straight line and **Earth is in the middle**. Hiding sun light from moon in the middle of lunar month
Types of shadow	**Cone shadow umbra**: it is the inner **dark area** where all the sun light is hidden **Semi-shadow penumbra**: it is the outer **semi dark** area where the sun light is **fainted**	The same two types of shadow
Duration	It last for 7 minutes and 40 seconds	It last for more than two hours
Time of occurrence	At the morning	At night
Types	**Total**: can't see the sun completely It occurs in **umbra shadow** area The moon in **near orbit**	**Total**: when **whole moon** enter umbra Moon's color tends to be red



	Size of moon seems nearly equal sun **Partial:** can see a part of sun only It occurs in **semi shadow penumbra** **Annular:** can see the sun as **light ring** This area called **antumbra** The moon in **higher orbit(far)** Size of moon seems smaller sun size	**Partial:** when **part of moon** enters umbra **Semi-shaded(penumbra):** when the moon enters the **penumbra** only Moon is fainted without eclipse
Last occurrence	Last one in middle east and north Africa was in 29th march 2006 the next 2027 Ancient people from the Babylon age managed to predict eclipses two years before occurrence	It occurs two times per year except 1982 three times Moon return to the same point of eclipse after 18 years and 11.3 days
Precautions	Must be taken because the corona of sun emit infrared and ultraviolet rays that cause blindness harming retina So we must use special glasses	No precautions must be taking because there is no harm rays


www.zakrooly.com
Science
الفصل الدراسى الثانى
Solar eclipse
Sun
Moon
penumbra
Earth
umbra
©1994 Encyclopaedia Britannica, Inc.
Sun
Moon
Umbra
Penumbra
Earth
Types of Solar Eclipses
Uneclipsed
Partial Eclipse
Annular Eclipse
Total Eclipse
Total Eclipse
Annular Eclipse
Partial Eclipse
Lunar eclipse
Sun
Moon
Earth
Umbra
Penumbra
Sun
Earth
Moon
Umbra
Penumbra
31
هذا العمل خاص بموقع ذاكرولى التعليمى ولا يسمح بتداوله على مواقع أخرى
بوكليت مدرسة دريم للغات
موقع ذاكرولى التعليمى
الصف السادس الابتدائى



Give reasons:

1-No annular lunar eclipse is formed like the annular solar eclipse

B. the earth is bigger than the moon, hide all sunlight.

2-The type of solar eclipse differs due to the movement of the Moon in front of the Sun

B. movement of the Moon changes the area of the shadow of the Moon on Earth.

3-We can't see the Sun completely during the total solar eclipse

B. we are in umbra shadow that the moon blocked the sun completely.

4-We can see a part of sun light during the partial solar eclipse

B. the moon blocked a part of sunlight and this is in penumbra (semi shadow)

5-We shouldn't look at the sun by the naked eye

B. sun emits harmful rays like Ultraviolet ray that can lead to blindness.

6-The phenomenon of solar and lunar eclipse is considered an application of the umbra phenomenon

. B. umbra is the dark area, and we can see total solar eclipse and total lunar eclipse.

7-The phenomena of solar and lunar eclipse are regularly repeated and can be predicted.

B. the Earth and the moon rotate in fixed orbits.



8-The color of the moon in the start of the total lunar eclipse tends to be red.

This is due to the red ray that cannot be absorbed from the Earth atmosphere.

9-In annular eclipse the sun seem as a lightening ring

B. the moon rotates in higher orbit so it seems smaller than sun

10-Both of eclipses don't affect the life on earth

B. in them sun light just be hidden for a short time two hours at most

11-Lunar eclipse can be seen only in the middle of lunar month

B. at this time moon Earth and sun in straight line with Earth in middle

12-Size of moon differ from time to time on Earth

B. it revolves in an oval orbit

13-No precautions must be taken in lunar eclipse

B. there in no harmful rays reaches our eyes

What happen when:

1- The Moon comes between sun and Earth in one straight line.

It makes solar eclipse.

2- The solar eclipse is watched from the umbra (shadow) region.

It appears as total solar eclipse.

3- The solar eclipse is watched from the penumbra(semi-shadow) region.

It appears as partial solar eclipse.



4-The solar eclipse is watched from the antuumbra region (small moon size)

It appears as annular solar eclipse.

5- You focus looking to sun directly during solar eclipse.

It harm eye retina and make blindness.

6- You use special glasses during observing solar eclipse.

Can watch solar eclipse safely.

7- The Earth comes between sun and Moon in one straight line.

It makes lunar eclipse.

8- The whole Moon enters the Earth's umbra.

It makes total lunar eclipse.

9- The part of moon enters the shadow (umbra) area.

It makes partial lunar eclipse.

10- The Moon lies in the Earth's penumbra.

It makes semi-shaded lunar eclipse.

11- The Earth lies in the Moon's umbra.

It make total solar eclipse.



Unit four

Absorption and transmission of water and mineral salts in the plants

Lesson 1

Note :-

Plant need a little amount of element such as phosphorus, magnesium, calcium, nitrogen and zinc because they are important for plant life.

Layers of root by order:

Epidermis – cortex – endodermis – xylem (wood) – pith

Corte
Epidermis
Root hair
Xylem (wood)
Endoderm

root hair
Epidermis
cortex
endodermis
pericycle
xylem
phloem
Vascular Cylinder
apical meristem
root cap



G.R: root system subdivided and extended through soil particles to

1- fix the plant in the soil

2- covering large area to (search for water and mineral salts – absorb them – raise them to other parts of plant to (shoot system) form food

Structure of root hairs:

1- extend from root (epidermis layer)
2- lined with thin layer of cytoplasm
3- have a big vacuole

G.R: the age of root hair doesn't exceed a few days

Because the skin cells slough by resistance of soil particles so they replaced

The role of root hair and their appropriateness in absorption of water and mineral salts:

1 – **G.R**: It has a thin membrane

to allows the penetration of water and salts through it.

2- **G.R**: It has a large number and extension outside the root

To increases the area of the absorption surface.

3- G.R: The concentration of the solution inside its vacuole is larger than the concentration of soil solution (area with a high concentration of water) or the root hair absorb water from soil

To helps in water transmission from the soil to it by the osmosis feature.

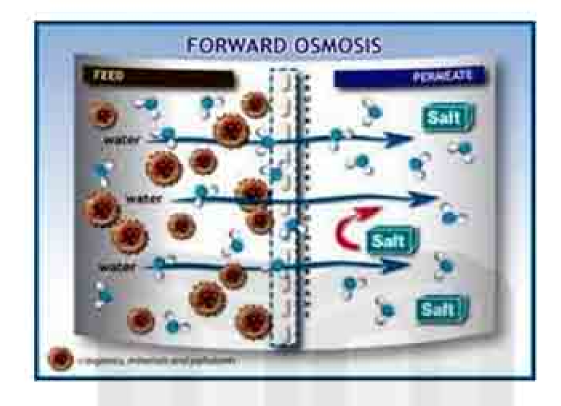
4- G.R: Root hair secretes a sticky substance

To helps in root penetration through soil particles so that it draws water to work as water membrane facilitating the absorption process.



Osmosis process:

it is the transmission of water and mineral salts from area of high concentration of water to low concentration of water through semi-permeable membrane



Notes:-

1- Endodermis which regulates water crossing through root

2- The juice is raised to reach the stem and other parts of the plant. Through wood tissue (xylem)

3- The cell membrane also has the osmotic property. It allows only some salts to pass through according to the plant's needs. This process needs energy that it obtains from the respiration process.

G.R: The condensation of water droplets on the inner surface of the planter. This is due to the vital process of the plants called the process of transpiration

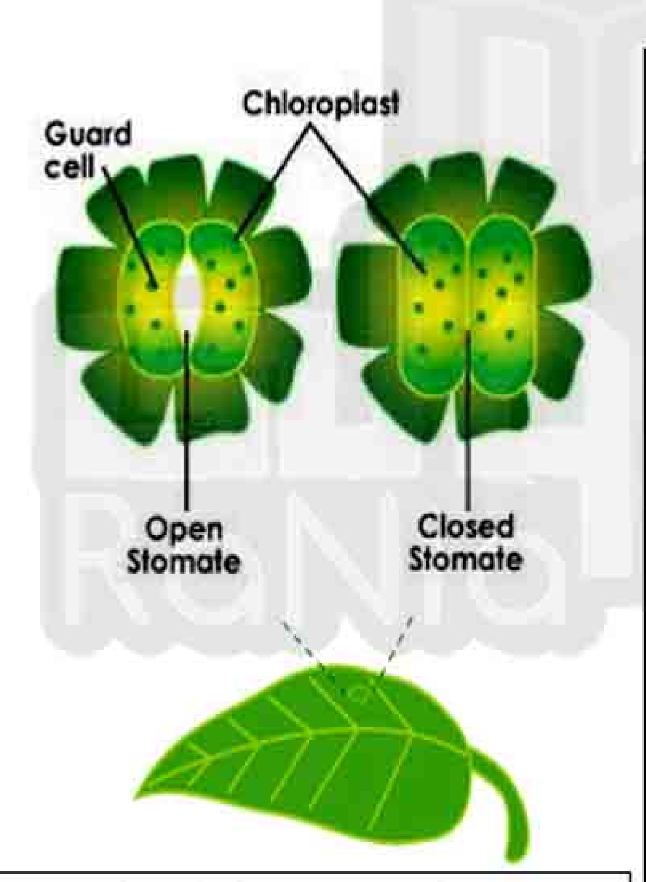


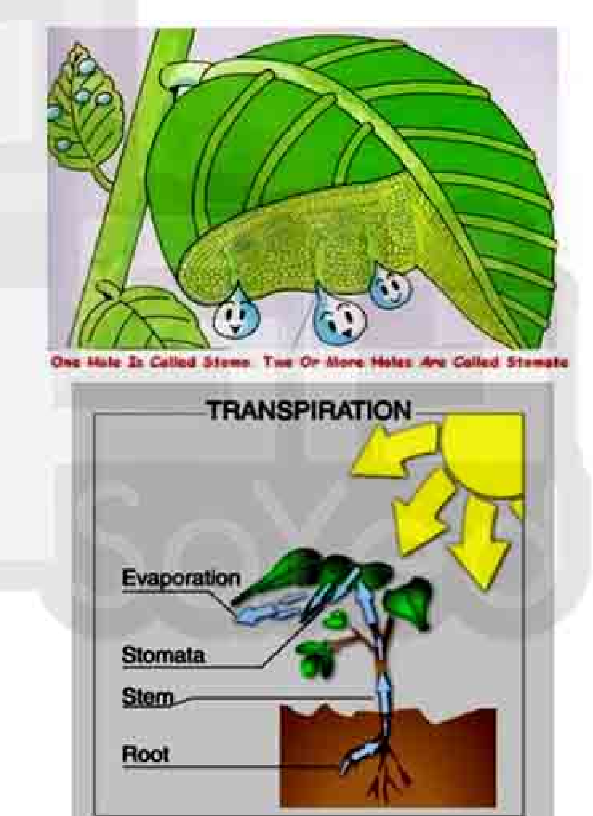
Transpiration

Is the losing of water in the shape of water vapor from the leaves or from other green parts to its surroundings through holes in the plant leaves called "**stomata**".

Stomata:

1- they are holes in the lower surface of leaves
2- through them plant loses most water in leaves
3- Each stoma is surrounded by two guard cells





G.R: Each cell changes its shape to open and close the stoma.

Then the plant loses water, this creates pressure that raises water o the top. This power is the result of transpiration.





WRITE SCIENTIFIC TERM :

1-The fixed point of a rigid bar rotate on.

2- A rigid bar rotates on a fixed point, and is affected by a force and resistance.

3- Levers that have the fixed point between the force and the resistance.

4- Levers that have the fixed between the resistance and the fixed point.

5- Levers that have the resistance between the force and the fixed point.

6. A way in which the light bulbs is connected one after the other, and the light intensity of the bulbs decreases with the increase in their number.

7. Means of converting the electric energy to lighting.

8. The way where the bulbs are connected by branching routes and the lighting of the lamps is not affected with the increase in their number.

9. Materials that allow electric current to pass through them.

10. Materials not allow electric current to pass through them.

11- One of dangers of electricity occur by pass electric current in human body.

12. Fires result from increase temperature of electric machines.

13. One of dangers of electricity causing damage of tissues of the body.

14- Occurs when the moon is located between Earth and sun on one straight line.

15- Occurs when the Earth is located between sun and moon on one straight line.

16- Occurs when the Earth region in the cone shadow of the moon.

17- Occurs when the moon is in the high place on its oval orbit around Earth.

18- Occurs when the moon enters the shadow area of the Earth completely.

19- Occurs when a part of the moon enters the cone shadow of the Earth.



20- Occurs when the moon enters the semi shadow (penumbra) area only.

21- Occurs when the Earth lies in semi-shaded (penumbra) area of the moon.

21- A device that collects light to see distant planets and stars clearly.

22- The first one who made an astronomical telescope by himself in 1609.

23- The most famous telescope that revolve around Earth in orbit of 600km.

24- The places where astronomers work and where telescopes are kept.

25- A groups of millions of stars forming beams of light in the darkness of Space

26- It is an astronomical phenomenon in which the moon hides the sunlight from us and a shadow of the moon is formed

27- Biological process through which plants lose water in the form of vapor.

28- Structure in plant water passes through it from root to stem to leaves.

29- Holes in plant leaves through which water evaporate from the plant.
30-Two cells surround each stoma to open and close it..

31- The phenomenon by which water transports from the soil to the inside of the root hairs.

32-A structure extends from root wall which absorbs water.

33- the flow of electric charges (electrons) through a material conducting electricity.

34- The element which the filament of the electric lamp made of

35- The most popular source of artificial light in all houses

36- The flow of electric charges through a conductor

37- The coiled wire which made of tungsten in the electric bulbs

38- The part of lamp which protects the filament from burning by isolating the air

39- A part of the electric lamp which connects the lamp in the circuit

40- The lamp which has 2 filament of tungsten

41- A closed path that the electric current passes in



42- The tissue that transfers the water & mineral to all parts of the plants.

43- The part of the root that responsible for absorption

44- The openings in the plant leaves to get rid of water in the form of water vapour

45- The two cells which surround the stomata

46- A force produced due to the lost of water which creates pressure

47- The transfer water of high concentration to the low concentration.

48- The solar eclipse in which the sun appears as a lighting ring.

49- Two cells that surround the leaf stoma.

50- The type of eclipse that can be seen at night.

51- The faint outer shadow of the moon.

52- The phenomenon that occurs two times per year in the middle of lunar month.

53- A biological process through which plants lose water in the form of vapour.

54- The color of the moon during the starting of the total lunar eclipse.

55- The lunar eclipse in which a part of the moon enters the earth's umbra.

56- Openings through which the plant undergoes the transpiration process.

57- The eclipse in which the sun disappears completely.

58- The outer most layer of the plant root.

59- The process by which plants lose the excess water.

60- Something is used to observe the solar eclipse safely.

61- The harmful rays emitted from the sun during the solar eclipse.

62- The way where the bulbs are connected by branching routes.

63- The area at which the total solar eclipse appears.



64- Transmission of water molecules through semi permeable membrane from an area of high concentration of water to an area of low concentration of water.

65- Away of connection in the electric lamps that is used to decrease the luminous intensity as their number increases.



1- Root hairs secrete a sticky substance.
To help root hairs to penetrate through soil particles

2- Each stoma is surrounded by two guard cells change their shape from time to time.
To control opening and closing of the stoma

3- The age of the root hairs does not exceed a few days.
Because the skin cells slough by resistance of soil particles,so they replaced

4- Plant's root is branched and extended between the soil particles.
To fix, search for water and mineral salts for plant.

5- Root hairs can absorb water from the soil.
By effect of osmosis through membrane of root hairs.

6- The concentration of solution inside the root hair vacuole is higher than the concentration of soil solution.
To help in water transfer from soil to root hairs by osmosis

7- Presence of holes (stomata) on the lower surface of plant leaves.
To get rid excess water by transpiration process

8- The presence of Xylem (wood tissue) in plant roots.
To transfer water and mineral salts from root to stem and leaves

9- Exploring distant space requires placing astronomical observatories outside the Earth atmosphere.
To get clear vision for the space



10- Since the past, man was concerned with observing stars and planets.

To find reasons for astronomical phenomena in the sky

11- Arab scientist used to watch moon from minarets.

To determine the start of the holy month of Ramadan by clear vision

12- Lenses and mirrors are used in making telescopes.

To collect light and electromagnetic waves

13- Telescopes are used to study the outer space.

To form magnified photos for space bodies

14-Al-Hassan Ibn Al-Haitham had a great role in the invention of telescope

B. he say that vision occur due to amount of light reflected or emitted from objects on the eye.

15- The two phenomena of lunar and solar eclipses are repeated regularly and can be predicted.

B. scientists can calculate the time of Earth and moon's rotation which affect both eclipses

16- Although the phenomena of lunar and solar eclipses attract the people's attention, they don't affect life on Earth.

B. in them sun light just be hidden for a short time two hours at most

17- Lunar eclipse can be seen only in the middle of lunar month

B. Earth lies between the sun and the moon on one straight line

18- No precautions must be taken in lunar eclipse

B. there in no harmful rays reaches our eyes

19- The color of the moon in the start of the total lunar eclipse tendsto be red.

due to the red rays of sun that cannot be absorbed from Earth atmosphere



20- No annular lunar eclipse is formed like the annular solar eclipse

B. the Earth is bigger than the moon it blocks all sunlight

21- We shouldn't look at the sun by the naked eye.

B. sun emits harmful rays like Ultraviolet ray that can lead to blindness.

22- In annular eclipse the sun seem as a lightening ring

B. the moon rotates in higher orbit so it seems smaller than sun

23- The annular eclipse occurs when the moon comes in higher orbit to Earth.

B. moon size is smaller than sun. S

24- The type of solar eclipse differs due to the movement of the Moon in front of the Sun.

B. this movement of the Moon changes the area of the shadow of the Moon on Earth.

25- We can't see the Sun completely during the total solar eclipse

B. in umbra shadow the moon blocked the sun completely.

26- Size of moon differ from time to time on Earth

B. it revolves in an oval orbit

27- Occurrence of solar eclipse.

B. Moon comes between sun and Earth, hide sunlight to reach Earth

28- Occurrence of lunar eclipse.

B. Earth comes between sun and Moon, hide sunlight to reach Moon

29-Flammable materials should not be placed close to electric heater.

To avoid electric fires

30- The light bulbs are connected in parallel in the house.

To avoid turning off of lamps when one lamp is damage



31- Plastic is considered as an electric insulator.

B. it does not allow electric current to pass through it

32. Water is not used to put out electric fires.

B. water is good conductor of electricity.

33. Don't place any metallic object inside the socket.

Or Pushing the injured by anything that is non-conducting of electricity such as a piece of wood.

To avoid electric shock.

1. The filament of the light bulb made of tungsten.

B. it has high melting point.

2. The glass bulb in light bulb filled with inert gas (Argon gas).

To avoid burning of the filament and increase its life

3. There are two pieces of lead in the base of light bulb.

To connect lamp with electric circuit.

4. There are two points of connection at each tip of fluorescent lamp.

To connect electricity.

5. The light bulbs are connected in parallel in the house.

To avoid turn off all lamps when one lamp is damage.

6. The second class levers conserve effort.

B. effort arm is always longer than resistance arm So effort force < resistance

7. The third class levers do not conserve effort.

B.effort arm is always shorter than resistance arm So effort force > resistance

8. The force and the resistance can be equal only in the first class levers.

B. in first class lever only effort arm may be = resistance arm



9. Some of the levers are important to man although they don't conserve effort

B. increasing distance and speed, avoid dangers, pick up very small objects

10. Sometimes the 1st class levers save effort

B. sometimes force arm is longer than resistance arm So effort force < resistance

11. The force doesn't equal the resistance in the 2nd class lever

B. effort arm is always longer than the resistance arm

12. In the 2nd class levers the force is always less than resistance

B. effort arm is always longer than the resistance arm .

13. When the resistance arm is longer than the effort arm, the effort force is larger than the resistance.

B. force and resistance are inversely proportional to its arm



1- There are no stomata in the plant leaves.

Plant can't get rid excess water by transpiration process

2- The concentration of soil solution is higher than the concentration of the solution inside the root hairs.

Water move from root hairs to soil by osmosis, plant wilt and die.

3- The wood tissue disappears from a plant.

Water can't transfer from root to stem and leaves

4- The Earth comes between the sun and the moon.

The lunar eclipse occurs



5-The whole moon enters the Earth's umbra.

Total lunar eclipse occurs

6- The solar eclipse is watched from penumbra region.

It appears as a partial solar eclipse

7- The Earth blocks the sunlight from reaching the whole moon.

Total lunar eclipse occurs

8- Putting astronomical telescope in tunnels.

We can't see clear vision for the space

9- The Earth comes between the sun and the moon.

The lunar eclipse occurs

10- The moon lies in the Earth's penumbra.

Semi-shaded lunar eclipse occurs

11- The whole moon enters the Earth's umbra (shadow).

Total lunar eclipse occurs

12- A part of moon enters the Earth's umbra (shadow).

Partial lunar eclipse occurs

13- The moon comes between the sun and Earth.

The solar eclipse occurs

14- The solar eclipse is watched from the umbra region.

It appears as total solar eclipse



15- The Earth lies in the Moon penumbra.

It appears as partial solar eclipse

16- The moon comes in higher orbit from Earth (antumbra).

It appears as annular solar eclipse

17- You focus looking to the sun directly during the solar eclipse.

It harm eye retina cause blindness

18- The electric fires are put out by using water.

The fire will increase and harm the rescuers

19- The glass bulb in electric lamp is filled with air.

The tungsten filament will burn when it heats up

20- The spark resulting from the electric fire touches any part of your body.

It cause electric burn

21- Touching a naked wire, while touching the ground.

Or you insert a metal bar in an electric socket

Or a man touches uncovered wire carrying electric current.

It cause electric shock

22- You place the electric heater too close to furniture or carpets.

When temperature of heater increases, they burn causes fire

23- You make the filament of the light bulb from iron.

The filament melts at high temperature.



24- There is air inside the light bulb.

The filament burn when it heats up.

25- The light bulbs in the house are connected in series.

Lamp turn off when one lamp is damage.



Complete

1-The ………….. phenomenon occurs continuously when the ………….. hides the sunlight during its pass in front of it from a part of the earth.

2- ………….. occurs when the ………….. comes between the sun ray and a part or whole of the moon.

3- A ………….. solar eclipse is formed when the moon is located in an orbit higher than the earth.

4-The nutcracker is an example of the .... levers.

5- The electric shock occurs as a result of the passing of .... through the human body.

6 - The .... in plant is surrounded by two guard cells.

7- Some of the types of electric lamps are .... and ....

1- .... and.................. are examples of materials that are electric conductors.

2-..................,.................. and .... are examples of materials that are electric insulators

3-.................., ...and .... are some of the dangers of the electricity

4-The .... leads to destroy the tissues of the body.

5- You cannot put out the electric fire with water because water is................

6-The electric shock occurs as a result of passing .... through the human body.

7- .... and .... are some of the precautions to del with the electricity.

8-The crowbar is considered a ………….... class lever, but the manual broom is a ……..... class lever.

9-……................. and ………………. are examples of the first class levers.

10-…….........….. and ….............…. are examples of the second class levers.

11- ……............…. and …..................…. are examples of the third class levers.

12-The nutcracker is an example of the .... levers.

13- The manual broom is an example of the .... levers.

14-The scissors are an example of the .... levers.

15- …………… is a rigid bar that rotates around a fixed point called

………… and is affected by ………… and ……………..

2- ……………. is a fixed point that the bar rotates on.

5- Levers can be classified into ………… types.

6- In levers of first order the ………… Is located between the ……….. and the …………..

7- The levers of first type save effort when the ………… is longer than the…………

8- Levers of second type save effort because effort arm is always

………..than resistance arm.

9- In the levers of third order, the ………… located between the ………….. and the…………..

10- The bottle opener and wheel barrow are levers of the ……….. kind, while the pilers are levers of the ………… kind.

11- ………… and ………… are examples of the first class levers.

12- ………… and ………… are examples of second class levers.

13- ………… and ………… are examples of third class levers.

14- The nutcracker is a lever of ………. Class, while the scissors are a lever of ………. Class.

15- The forceps are lever of the third order in which the ………… is longer than……….

16- The pincers are from the levers of ………. Class while the ice holder is from the levers of the ………. Class.

1- ……………. is the main source of heat & light

2- ……………. A tool that converts electric energy to light

3- …………… is ………… are considered one type of light bulb.

4- The filament of the light bulb is made of …………

5- The electric lamp connected to the electric circuit by………….

6- We fill the lamp with ………. gas to stop combustion.

7- …….,………. & ………… from the dangerous effects of electricity.

8- …….,……… are good conductor electricity

9- …….,…….,………. are bad conductor of electricity

10- From the precautions in dealing with electricity are ………. ,……………. , …………

11- ………… Occurs when earth, moon and sun are nearly on one straight line with the moon in the middle.

12- ………… hides the sunlight from us and a ……… Of the moon is formed.

13- Solar eclipse does not last more than ………… Minutes and ……….. Seconds.

14- There are three types of solar eclipse which are …………,……….. and …………………

15- Doctors warn of ……………. As its rays ……….. and can lead to…………… within few minutes.

16- Solar eclipse effects the eye in general or the …………

17- …………. Are used to observe the solar eclipse.

18- The lunar eclipse occurs in ………… of lunar month.

19- Lunar eclipse occurs when earth hides ……….. Or apart of it from moon at a rate of ……….. lunar eclipses per year.

20- There are two types of lunar eclipse which are ……….. and ……………

21- Green plants depend on ………..,……….. from the air …….. & ……….. From the soil

22- Plants make their own food through a process called ……….

23- ………,……….,………., are the elements which the plants need in small amounts

24- Absorbing minerals & water from the soil occurs by ………… in the root.

25- The root systems composed of ………….&…………

26- The root hair is lined from in side with a thin layer of …………..

1- The root hair is lined formed from ……layer.

2- The role of root hair in absorption of water & minerals. ………..

3- The tissue which Transfers water & salts to the plant parts is called………….

4- Osmotic properties is ………….



5- The vital process by which the plant get rid of water is called ....

7-Tweezers are used to .... , while .... is used to move Force from place to another place.

8- .... eclipse is seen at the morning, while .... Eclipse is seen at night.

9- In the plant root, the epidermis layer is followed by .... layer, then endodermis layer that is followed by .... Layer, then .... Layer.

10- The midpoint in the first class lever is ...., while .... is the midpoint in the third class levers.

11- .... eclipse requires safety precautions, while .... Eclipse does not.

12- Plants get rid of excess water through .... process, while it makes its own food through .... process.

13- The lunar eclipse occurs in the .... Of the lunar month when the moon phase is ....

14- The inner most layer of plant root is called ...., while the outermost layer is called ....

15- .... system fixes the plant in the soil.

16- The .... in plant is surrounded by two guard cells.

Correct

1-The electric lamp converts the electric energy to the <u>kinetic</u> energy.

2- The filament of the light bulb is made of <u>carbon</u>.

3- While connecting the lamps in <u>parallel,</u> the lamps are connected one after another.

4- There are two connecting points at each end of <u>the light bulb</u> ends.

5-The electric <u>fire</u> occurs due to the passage of the electric current through the human body.



6-The electric lamps are connected in the house in <u>series.</u>

7-The lamps in the electric circuit continue to work when connected in <u>series</u> if a lamp is damaged.

Choose the correct answer:

1- Stomata are wide spreading on: ....

(Stem -Leaf upper surface -Leaf lower surface)

2-Root hair absorbs water by: ....

(Swallowing - Osmosis - Voluntarily feature)

3-Root hair has a .... age.

(Short - Average -Long)

4-Plant loses water in form of water vapor in ....

(Photosynthesis - Transpiration - Evaporation)

5- Root hair wall is ....

(Thin –thick –average)

1- The effort lies between resistance and fulcrum in the.

(Wheel borrow – pincers – hammer – sugar holder

2- .... Are examples of third order levers.

(Pincers – scissors – coal tongs – pliers).

3- Fulcrum is located between resistance and effort in the ....

(Nutcracker – ice holder – Scissors – bottle opener).



4- Put (√) or(x) and correct the wrong words:

1-The first class levers has the resistance between the force and the fulcrum. ( )

2- The second class levers has the force between the resistance and the fulcrum. ( )

3-The third class levers has the fulcrum between the force and the resistance. ( )

4- The crowbar is an example of the first class levers. ( )

5- Second class levers has a force between the resistance and the fulcrum.

6- The crowbar is an example of first class levers ( )

7- Two phenomena of lunar and solar eclipse are repeated regularly and can be predicted ( )

8- More than one type of solar eclipse can be observed. ( )

9- When the cone shadow doesn't reach earth surface so annular solar eclipse can be observed ( )

1- The penumbra is the moon's dark inner shadow.

2- Stomata are widely spread on the upper surface of the plant leaves.

3- There is no danger when touching an electric machine with wet hands.

4- The cone shadow of the moon is called umbra.



5- The effort is between the fulcrum and resistance in the second class levers.

6- Argon is used instead of air inside the bulb of electric lamp to protect the thick copper wires from burning.

7- Stem extends and penetrates the soil to increase the absorption process.

8- The lunar eclipse can last for seven minutes only.

9- Soda water opener is a second class lever, while the fishing tool; is a first class lever.

10- Plant stoma is surrounded by two woody cells.

11-Copper and iron are electric conductors.

12- Root hairs are continuously replaced by new ones.

13- Water is a bad conductor of electricity.

14- The lunar eclipse does not require precautions or special devices to be observed.

15- Water rises inside the plant stem through the wood tissue.

16- The rigid bar of the lever is affected by three forces.

17- Fluorescent lamp contains neon gas.

18- The glass bulb of electric lamp contains atmospheric air.

19- Root hairs extend from the cells of the endodermis layer.

20- In the third class lever, the effort force is between the resistance force and fulcrum.